

## CLAIMS

What is claimed is:

1. A method of performing cubic mapping with texturing, comprising
  - 2        selecting neighboring pixels to be mapped;
  - 3        computing normals of the neighboring pixels;
  - 4        mapping the normals of the pixels to faces of a cube, wherein the neighboring pixels are such as to be mapped to adjacent faces of the cube, and each face has an identifying number, a level of detail (LOD) number, and a pair of texture coordinates for defining a mip-map for the face; and
  - 8        computing an LOD parameter for the texture coordinates of the neighboring pixels based on continuity-adjusted derivatives of the texture coordinates.
1. 2. A method of performing cubic mapping as recited in claim 1, wherein the step of computing an LOD parameter includes:
  - 3        obtaining a continuity adjustment code based on the identifying numbers for each of the adjacent faces;
  - 5        using the adjustment code to compute an approximation to derivatives of the texture coordinates, the approximation including an adjustment to maintain continuity of the derivatives across the adjacent faces; and
  - 8        computing the LOD parameter based on the continuity-adjusted derivatives.
1. 3. A method of performing cubic mapping as recited in claim 2, wherein the continuity adjustment code is obtained from a table of codes, the table being indexed by the identifying numbers for the faces.
1. 4. A method of performing cubic mapping as recited in claim 2,
  - 2        wherein the approximation to the derivative of the texture coordinates is based on the difference between the texture coordinates of the neighboring pixels; and
  - 4        wherein the continuity adjustment includes swapping coordinates in a pair of texture coordinates.

1       5. A method of performing cubic mapping as recited in claim 4,  
2           further comprising the step of normalizing the texture coordinates prior to computing the  
3       LOD parameter; and  
4           wherein the continuity adjustment includes compensating for the normalizing step.

1       6. A method of performing cubic mapping as recited in claim 5, wherein the step of  
2       compensating includes adding or subtracting one.

1       7. A method of performing cubic mapping as recited in claim 2,  
2           wherein the approximation to the derivative of the texture coordinates is based on the  
3       difference between the texture coordinates of the neighboring pixels; and  
4           wherein the continuity adjustment includes negating one of the texture coordinates.

1       8. A method of performing cubic mapping as recited in claim 7,  
2           further comprising the step of normalizing the texture coordinates prior to computing the  
3       LOD parameter; and  
4           wherein the continuity adjustment includes compensating for the normalizing step.

1       9. A method of performing cubic mapping as recited in claim 8, wherein the step of  
2       compensating includes adding or subtracting one.